

WINDMASON COOLING TOWERS

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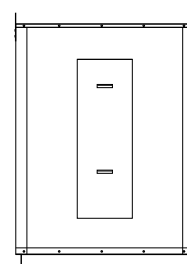
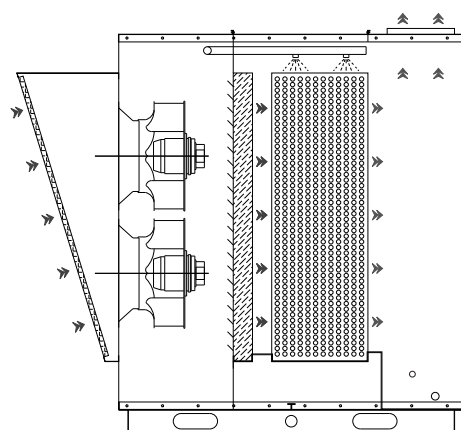
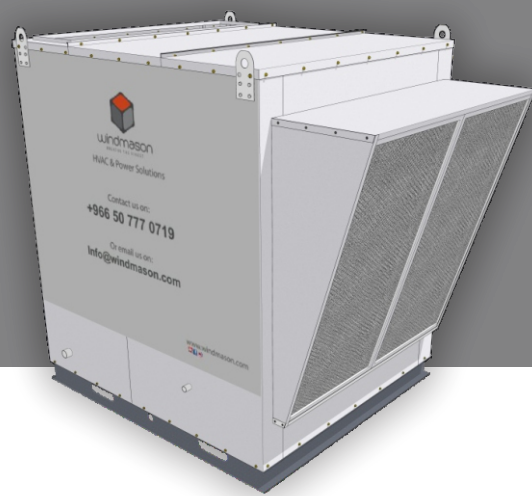
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CROSS FLOW COOLING TOWER, OPEN LOOP

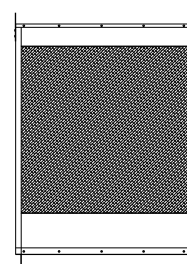
WM-CTA SERIES

WM-CTA

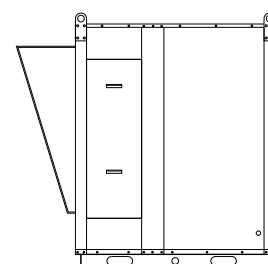
- ✱✱ These cooling towers are modular type / design can work as array for larger capacities as per requirements.
- ✱✱ The equipment is made of industrial grade material, with superior corrosion resistant features.
- ✱✱ These Cooling towers are designed of high efficiency but lower initial and long-term costs, easy and economical installation and maintenance.
- ✱✱ The towers dimensions can be customized to suit standard containers or particular project conditions.
- ✱✱ These towers are widely applied in different fields, to cool circulating water, oil or other process fluid for HVAC System, Compressors, Furnaces, Data Centers, Ground Source Heat Pumps, Power Generators, Transformers, Converters, Refrigerators, Food and Chemical Production Lines, etc.



VIEW 1



VIEW 2



VIEW 3

WORKING THEORY

Its belong to induced draft type cross flow cooling towers.

During the working process, dry ambient air forced by backward curve centrifugal dry running fan, passed through the air filter which reduce the dust and provide clean air, the air then enters to the louver, then passed through the metal pipe coil, meanwhile the water sprayed on the coil and its evaporate, cool the fluid inside the coil, the wet air then pass through the drift eliminator and goes to the top discharge opening.

The evaporative water circulates through the open loop and sprayed on the metal pipe coil, to continue the cooling process.

- ✱✱ **CAPACITY:** 30 tons nominal, can work in series/grid as a group for larger capacities as much as required.
- ✱✱ **CASING:** made of two layers, external layer is galvanized steel with oven backed powder coat, and internal layer is heavy gauge re-enforced fiber glass.
- ✱✱ **FILLS & DRIFT ELIMINATORS:** made of PVC. With a layer of cellulose to reduce the scaling in the main PVC fillles.
- ✱✱ **SPRAY NOZZLES:** of high-quality PVC material, longer life, best water distribution on the top of the fillles.
- ✱✱ **WATER BASIN / TANK:** made of galvanized steel external and fiber glass internal layer, with thermal insulation at the bottom, WITH clean out pipe connections.
- ✱✱ **FAN:** are backward curve centrifugal aluminum heavy gauge impellers. A/C induction motor. Dry running location to avoid corrosions and failure.
- ✱✱ **AIR FILTER:** has been used to keep the tower inside cabin clean and reduce maintenance cost, filters are washable aluminum media. It provides longer life to the fan and motors.

CROSS FLOW COOLING TOWER, OPEN LOOP TECHNICAL DATA TABLE

Model No.	Nominal Tons	FAN		Spray Pump		Connecting Pipe (mm)			Overall Dimensions (mm)			Weight	
		Power (kW)	Air Volumn cfm	Power (kW)	Flow Rate (gpm)	Inlet / Outlet	Make Up	Drainage	L	W	H	Net (kg)	Operation (kg)
WM-CTA-30	30	2.0	10000	1.5	70	50	25	50	2350	1650	2070	586	790
WM-CTA-40	40	3.0	15000	3.0	105	63	25	63	2350	1650	2560	760	980
WM-CTA-60	60	4.0	20000	4.0	140	50 x 2	25	50 x 2	2350	3300	2070	1172	1580
WM-CTA-80	80	6.0	30000	5.5	210	63 x 2	25	63 x 2	2350	3300	2560	1520	1960
WM-CTA-120	120	9.0	45000	7.5	280	63 x 3	25	63 x 3	2350	4950	2560	2280	2940
WM-CTA-160	160	12.0	60000	7.5	370	63 x 4	50	63 x 4	2350	6600	2560	3040	3920
WM-CTA-200	200	15.0	75000	10.0	470	63 x 5	50	63 x 5	2350	8250	2560	3800	4900
WM-CTA-240	240	18.0	90000	10.0	560	63 x 6	50	63 x 6	2350	9900	2560	4560	5880
WM-CTA-280	280	21.0	105000	15.0	650	63 x 7	50	63 x 7	2350	11550	2560	5320	6860
WM-CTA-320	320	24.0	120000	15.0	750	63 x 8	50	63 x 8	2350	13200	2560	6080	7840
WM-CTA-360	360	27.0	135000	18.0	850	63 x 9	50	63 x 9	2350	14850	2560	6840	8820

NOTES:

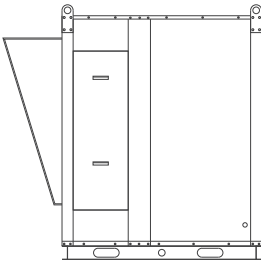
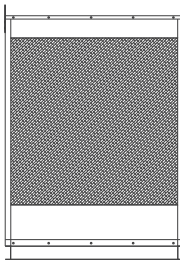
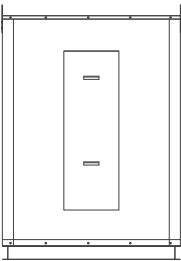
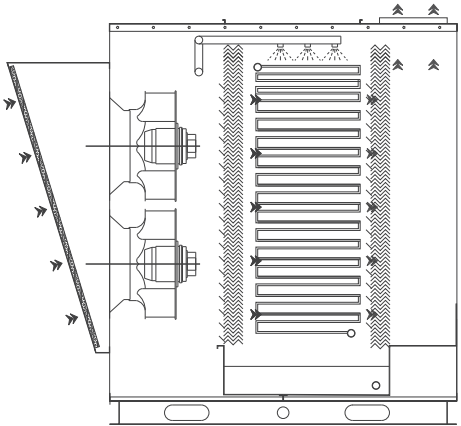
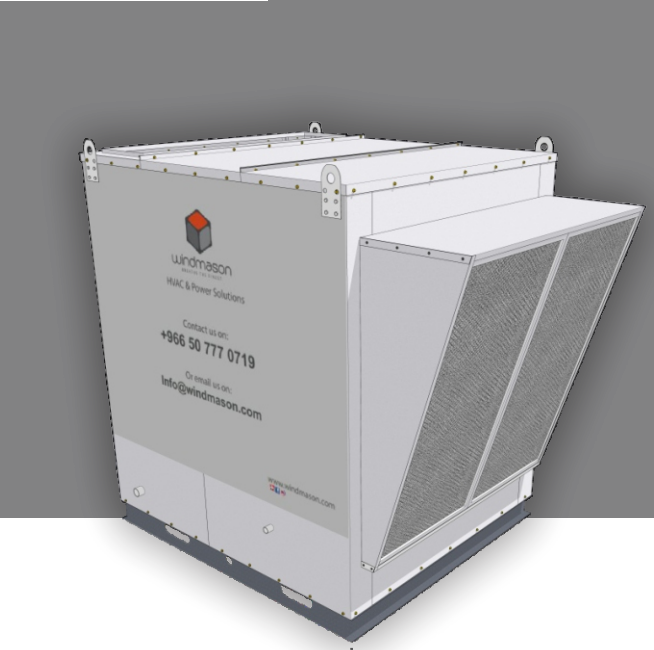
Capacity is based upon ambient conditions of DBT- 45 C, WBT- 20 C, Altitude - 600m
DBT : Dry Bulb Temperature, WBT : Wet Bulb Temperature

CROSS FLOW COOLING TOWER, CLOSED LOOP

WM-CTB SERIES

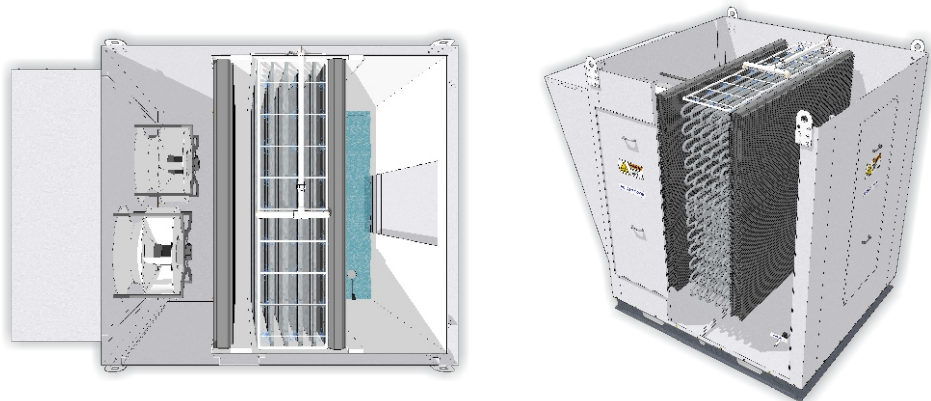
WM-CTB

- ❖❖❖ These cooling towers are modular type / design can work as array for larger capacities as per requirements.
- ❖❖❖ The equipment is made of industrial grade material, with superior corrosion resistant features.
- ❖❖❖ These Cooling towers are designed of high efficiency but lower initial and long-term costs, easy and economical installation and maintenance.
- ❖❖❖ The towers dimensions can be customized to suit standard containers or particular project conditions.
- ❖❖❖ These towers are widely applied in different fields, to cool circulating water, oil or other process fluid for HVAC System, Compressors, Furnaces, Data Centers, Ground Source Heat Pumps, Power Generators, Transformers, Converters, Refrigerators, Food and Chemical Production Lines, etc.



- ❖❖❖ **Capacity:** 20 tons nominal, can work in series/grid as a group for larger capacities as much as required.
- ❖❖❖ **Casing:** made of two layers, external layer is galvanized steel with oven backed powder coat, and internal layer is heavy gauge re-enforced fiber glass.
- ❖❖❖ **Heat exchange** coils made in stainless steel or red copper coated.
- ❖❖❖ **Fills & drift eliminators** made of PVC. With a layer of cellulose to reduce the scaling in the main PVC fillies.

- ❖❖❖ **Spray nozzles** of high-quality PVC material, longer life, best water distribution on the top of the pipes.
- ❖❖❖ **Water basin / tank** made of galvanized steel external and fiber glass internal layer, with thermal insulation at the bottom, with clean out pipe connections.
- ❖❖❖ **Fan** are backward curve centrifugal aluminum heavy gauge impellers. A/C induction motor. Dry running location to avoid corrosions and failure.
- ❖❖❖ **Air filter** has been used to keep the tower inside cabin clean and reduce maintenance cost, filters are washable aluminum media. It provides longer life to the fan and motors.



WORKING THEORY

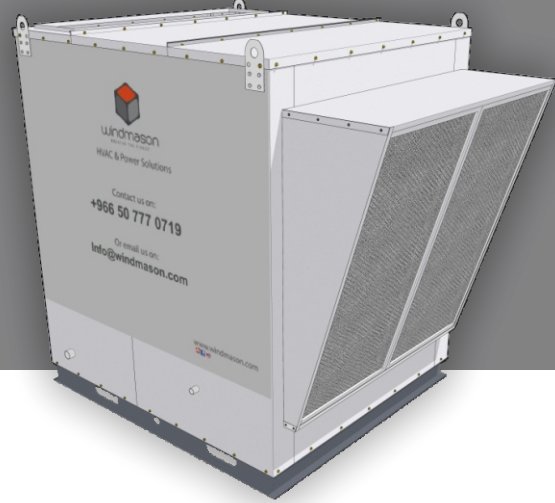
Its belong to induced draft type cross flow cooling towers. During the working process, dry ambient air forced by backward curve centrifugal dry running fan, passed through the air filter which reduce the dust and provide clean air, the air then enters to the louver, then passed through the metal pipe coil, meanwhile the water sprayed on the coil and its evaporate, cool the fluid inside the coil, the wet air then pass through the drift eliminator and goes to the top discharge opening. The evaporative water circulates through the open loop and sprayed on the metal pipe coil, to continue the cooling process.

Model No.	Nominal Tons	FAN		Spray Pump		Connecting Pipe (mm)			Overall Dimensions (mm)			Weight	
		Power (kW)	Air Volumn (m³/s)	Power (kW)	Flow Rate (T/h)	Inlet / Outlet	Make Up	Drainage	L	W	H	Net (kg)	Operatio (kg)
	30	1.1 x 2	3.7 x 2	1.5	45	DN80	DN25	DN40					
	37	1.1 x 2	3.7 x 2	1.5	45	DN80	DN25	DN40					
	43	1.1 x 2	3.7 x 2	1.5	45	DN80	DN25	DN40					
	49	1.1 x 3	3.7 x 3	2.2	60	DN80	DN25	DN40					
	61	1.1 x 3	3.7 x 3	2.2	60	DN80 x 2	DN25	DN40					
	79	1.5 x 3	5.1 x 3	2.2	60	DN80 x 2	DN25	DN40					
	98	1.5 x 4	5.1 x 4	2.2	114	DN80 x 2	DN25	DN40					
	110	1.5 x 4	5.1 x 4	2.2	114	DN80 x 2	DN25	DN40					
	122	1.5 x 4	5.1 x 4	2.2	114	DN80 x 2	DN25	DN40					
	134	1.5 x 4	5.1 x 4	2.2	114	DN80 x 2	DN25	DN40					
	152	1.5 x 4	5.1 x 4	3.7	140	DN100 x 2	DN40	DN40					
	183	2.2 x 4	6.3 x 4	3.7	140	DN100 x 2	DN41	DN40					
	213	2.2 x 4	6.3 x 4	3.7	140	DN125 x 2	DN42	DN40					
	244	4 x 4	16.7 x 4	5.5	160	DN125 x 2	DN43	DN40					
	274	4 x 4	16.7 x 4	5.5	160	DN125 x 2	DN44	DN40					
	305	4 x 4	16.7 x 4	5.5	160	DN150 x 2	DN45	DN40					
	335	4 x 4	16.7 x 4	5.5	160	DN150 x 2	DN46	DN40					
	366	4 x 4	16.7 x 4	5.5	160	DN150 x 2	DN47	DN40					

NOTE

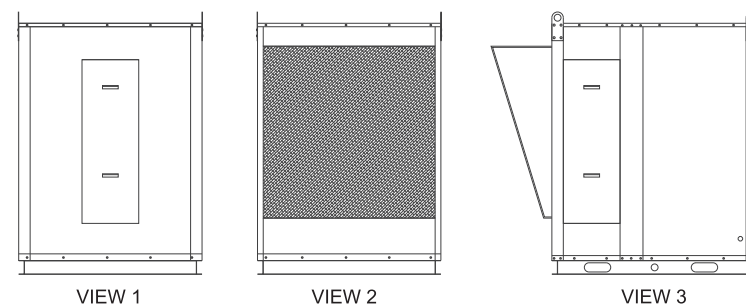
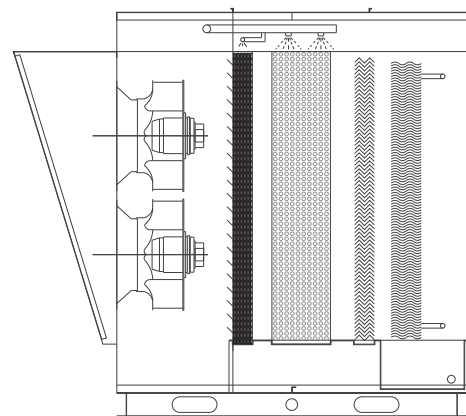
Nominal Tons are based upon temp. drop 35 ~ 29.5 °C / 95 ~ 85 °F, WBT 25.5 °C / 76 °F, and 0.681m³/hr/ton.

EVAPORATIVE CONDENSER COOLING TOWER



WM-CTE

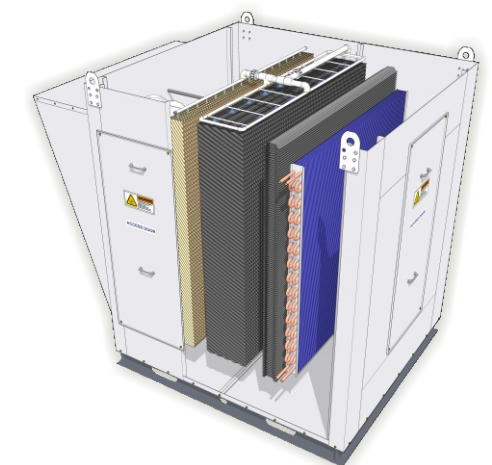
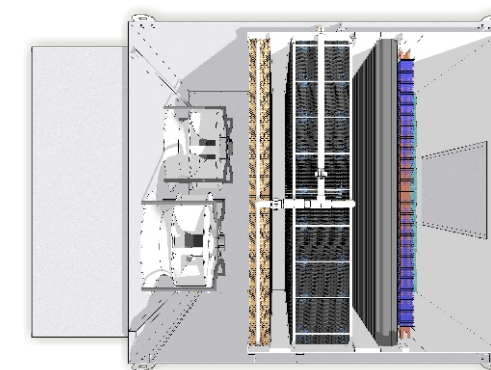
- ** If the ambient goes higher than 48 C, most of the air conditioning, refrigeration units and chiller units reduce efficiency drastically and most of the time it stops operating or damage the compressors or other parts.
- ** The evaporative condenser provides cold air for the refrigerant cooling, condenser, it supports the compressor specially in the peak summer to reduce the risk of failure of the refrigeration system and reduce the power consumption of the system.
- ** This is modular type / design equipment, can work as array for larger capacities as per requirements.
- ** The equipment is made of industrial grade material, with superior corrosion resistant features. easy and economical installation and maintenance.
- ** The equipment dimensions can be customized to suit standard containers or particular project conditions.



2D Views

- ** The equipment utilizes the evaporation of partial spray water, to absorb the heat from the flowing gaseous refrigerant of high temperature inside the condensing coils, and cool the refrigerant from gaseous state to liquid form.
- ** In a complete evaporative cooling system, compressor discharges high pressure evaporated refrigerant in gas form, which passes through the heat exchange coils of evaporative condenser, and exchanges heat with spray water outside the heat exchange coils. After entering heat exchange coils from upper inlet, gaseous refrigerant is gradually cooled to be liquid form from top down.

- ** The strong wind of fans makes spray water fully cover the heat exchange surface of the coils evenly, and this tremendously increases the heat exchange efficiency.
- ** Partial calefactive spray water gets vaporized and takes away massive heat with the air flow.
- ** Small water drops in hot air are intercepted by high efficient drift eliminator, collected and fall back to wet deck fills together with hot spray water, then gets cooled by flowing air, eventually return to the spray water basin after temperature decreased.
- ** This whole process is recycling by the circulating pump, and the evaporated spray water is made up automatically by water level regulator.
- ** these evaporative condensers are widely applied in different fields, to cool refrigerant in the system for the chiller units, large air conditioning units, cold storage refrigeration units.
- ** This equipment have its own condenser coil (heat exchanger) only the refrigerant in and out shall be connected to the coil to operate the system.
- ** The cool air coming from the water evaporative unit pass through the condenser coil for cooling. Its achieve 85% wet bulb temperature.
- ** It can cool any fluid with best efficiency. The system application are fluid cooling for HVAC System, Compressors, Furnaces, Data Centers, Ground Source Heat Pumps, Power Generators, Transformers, Converters, Refrigerators, Food and Chemical Production Lines, etc.



3D Views

WORKING THEORY

During the working process, dry ambient air forced by backward curve centrifugal dry running fan, passed through the air filter which reduce the dust and provide clean air, the air then enters to the louver, then passed through the PVC filles for evaporation, the water spray on the top of the filles provide evaporative surface. The air then cool to 80-90% of the wet bulb temperature. This cool air pass through the hot condenser / coil (heat exchanger) and cool the fluid inside the pipes. The water pump circulates the evaporative water and spray it on the top of the fills.

- ** **CAPACITY:** 30 tons nominal, can work in series/grid as a group for larger capacities as much as required.
- ** **CASING:** made of two layers, external layer is galvanized steel with oven backed powder coat, and internal layer is heavy gauge re-enforced fiber glass.
- ** **HEAT EXCHANGE COILS:** made of copper tube aluminum fins coated surface for corrosion resistance.
- ** **FILLS & DRIFT ELIMINATORS:** made of PVC. With a layer of cellulose to reduce the scaling in the main PVC fillers.
- ** **SPRAY NOZZLES:** of high-quality PVC material, longer life, best water distribution on the top of the fillers.
- ** **WATER BASIN / TANK:** made of galvanized steel external and fiber glass internal layer, with thermal insulation at the bottom, WITH clean out pipe connections.
- ** **FAN:** are backward curve centrifugal aluminum heavy gauge impellers. A/C induction motor. Dry running location to avoid corrosions and failure.
- ** **AIR FILTER:** has been used to keep the tower inside cabin clean and reduce maintenance cost, filters are washable aluminum media. It provides longer life to the fan and motors.

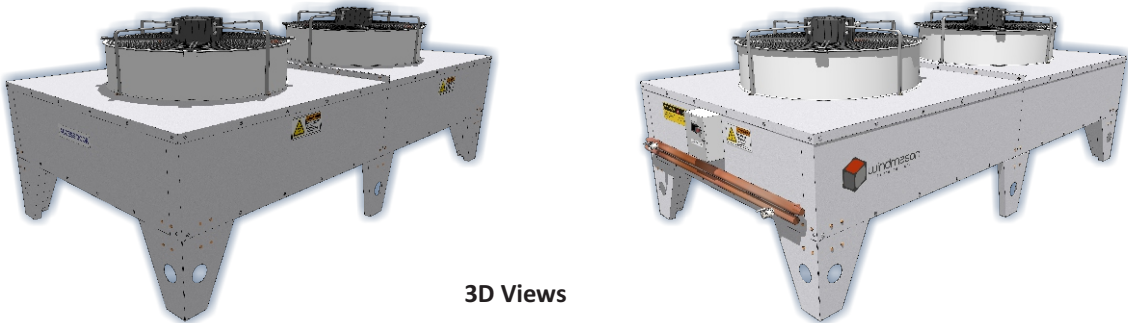
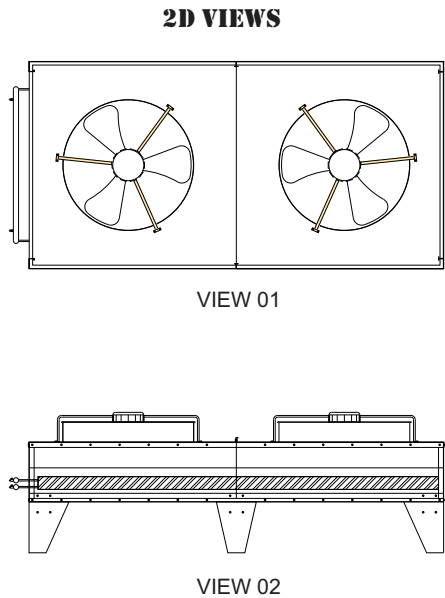
EVAPORATIVE CONDENSER COOLING TOWER, TECHNICAL DATA TABLE

Model No.	Nominal Tons	Saturation / Cooling Efficiency	FAN		Spray Pump		Connecting Pipe (mm)			Overall Dimensions (mm)			Weight	
			Power (kW)	Air Volumn cfm	Power (kW)	Flow Rate (gpm)	Inlet / Outlet	Make Up	Drainage	L	W	H	Net (kg)	Operation (kg)
WM-EC-25	25	90%	2.0	10000	1.5	70	50	25	50	2350	1650	2070	586	790
WM-EC-50	50		3.0	15000	3.0	105	50 x 2		50 x 2	2350	1650	2560	760	980
WM-EC-75	75		4.0	20000	4.0	140	50 x 3		50 x 3	2350	3300	2070	1172	1580
WM-EC-100	100		6.0	30000	5.5	210	50 x 4		50 x 4	2350	3300	2560	1520	1960

DRY AIR-COOLING UNIT COOLING TOWER

- ** **WM-CTD**
- ** Dry air-cooling units has been developed as modular type, if required multi units can be used as array or grid to provide more high capacities.
- ** The body panels are galvanized steel coated finished reinforced structure.
- ** The design has been optimized to reduce the weight and physical size and increase the efficiency, to suit its installation on the roof without worry of weight load.
- ** Heat exchange coils made in copper tube or stainless-steel tubes fitted with aluminum or copper fins around the tubes. The fluid inlet and outlet are set on the same side, easy in installations.
- ** The overall dimensions can be tailor-made to suit standard containers or particular project conditions.
- ** These dry cooler units are more widely applied to cool process fluids (water, oil, or gas) of generally higher temperature, such as for Air Compressors, Furnaces, Heaters, and other utilities in Gas Stations, Refinery Industries, etc., especially in the area short of water resources.

WM-CTD SERIES

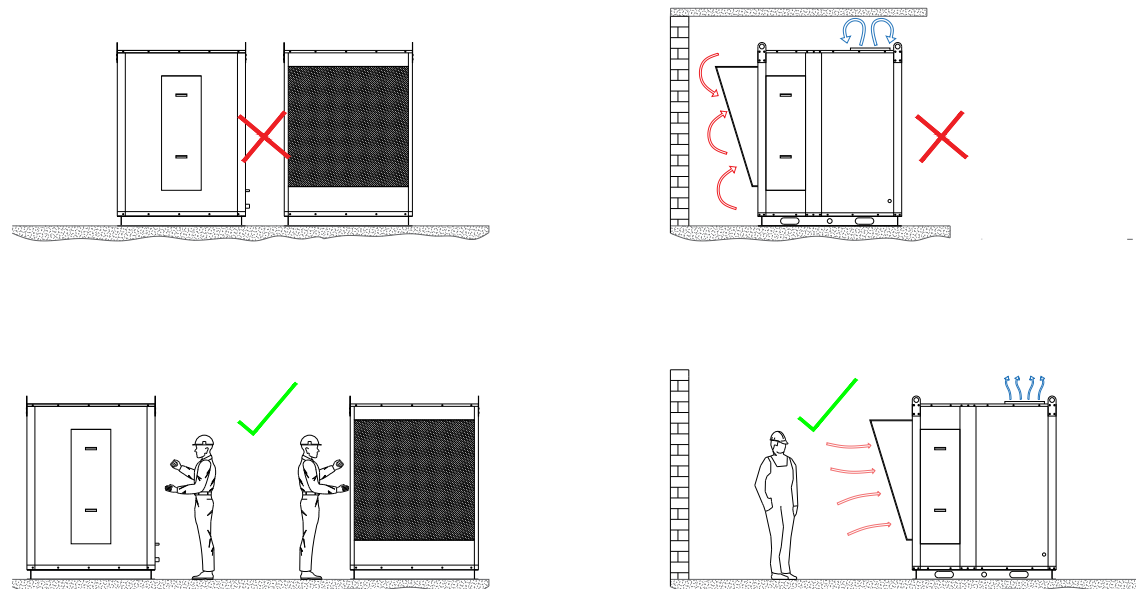


NOTES:
Capacity is based upon ambient conditions of DBT- 45 C, WBT- 20 C, Altitude - 600m
DBT : Dry Bulb Temperature, WBT : Wet Bulb Temperature

WORKING THEORY
Dry cooling towers work without spray water. High volume of air is inlet continuously through the louvers, going through the large surface of heat exchange coils with intensive fins. Heat from the process fluid inside the coils is transferred to the high-speed flowing air efficiently, and induced draught out of the tower into the atmosphere by the strong fans on the top.

INSTALLATION Guides

The cooling tower should be installed on a solid floor, to avoid resonance, vibration and noise. The tower should be located in an open area, with sufficient space - about 2 meters away from any wall to allow for effective air flow. The location should be free of airborne pollutants – and away from acidic and explosive environments in particular.



2.PRECAUTIONS

- Check the nameplate and confirm the power supply is suitable for the tower
- Prevent backflow of water vapor or hot wet air
- Provide drainage around the tower (fall > 0.8%) around the base of the tower to remove any condensate water or minor overspray
- Comply with all local Electrical and Building Regulations during the installation

3.PLUMBING

- Select a suitable type and size of water pipe to connect the water inlet and outlet
- Fix the external water pipes properly. Pipes must not be supported by the tower

4.ELECTRICAL CONNECTION

Standard power supply is 380V±10%, 3-Phase, 50 Hz. If this has been customized to your requirements, the details will be indicated on the tower nameplate as well as at the front of the instruction manual. For further details, please refer to the Electrical Diagram Drawings provided along with the tower.

NOTE

Foundation design is provided for each project. Commissioning & Operation guides please refer to the service manual of each product. For further technical support, please contact us.

BASIC CONFIGURATIONS

SPRAY NOZZLES FOR OPEN TOWERS

The Spiral Target Nozzles used for GOM Series open towers, injection molded in polypropylene unit consisting of two parts, main body with integral target diffuser and a snap-on insert or orifice cap. The nozzles installed in bottom of the hot water distribution basins, to eliminate water diffusion decks below the hot water basins, provide full water coverage of the fills by gravity flow, removable and replaceable but of long service life. Sizes and variety depends on the tower size, water flow rate and water quality.



SPRAY PIPE

Spray Pipes made in U-PVC from FPC, of high mechanical strength and long service life, holding pressure 1.0 Mpa, accessible to inspect and maintain from outside of the tower, convenient to check with when running fully, completed with buttonholes for quick and tight installations of spray nozzles.



FLOAT VALVE

Heavy duty floating valve, made in stainless steel, floating ball in engineering plastic or stainless steel, with long service life. Water level adjustable.



FASTNERS

Fastners of leading brands, standard materials in steel dacromet treated, stainless steel on options. Intensity of fastners is higher than average.



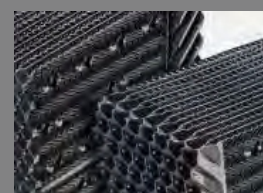
SPRAY PUMP

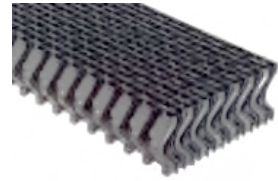
Standard spray pumps are of GZ horizontal centrifugal series from GSD brand, with motor of brand TECO, specially designed for evaporative cooling equipments, of generally large flow rate but low pumping head. The selected pumps are of dynamic-static balance, with shaft as an extended section from the motor, for most reliable concentricity. With first grade bearings, the pumps run at minimized vibration and low noise. Mechanic seals avoids abrasion to shaft, no leakage in long term service life. Overload protected on any point of the performance curve, not exceeding the rated power during the whole working period. Enclosure materials and installation arrangement can be optional and modified to suit different projects requirements.



WET DECK FILL

The fills are formed in flame-retardant PVC sheets with a special shape design of herringbone surface, to distribute water evenly over the entire fill area for maximal thermal performance, can be integrated with air inlet louvers and drift eliminators. For medium fouled water, fill types with enlarged grids are available to reduce the chances of blocks. All the raw materials are of virgin grade from approved suppliers, with long service life in tough environment.





DRIFT ELIMINATOR

Cellular Drift Eliminators are specifically designed to achieve maximum drift removal, with significantly lower pressure drop. The modules are constructed of a series of sinusoidal-shaped, corrugated PVC sheets that are mechanically assembled to mating sinusoidal structural waves, forming closed cells. These cells force the drift droplets being carried in the leaving airstream to make three distinct changes in direction. When the air is forced to change direction, the inertia of the water droplets keeps them moving in a straight line, causing them to impact the wall of the drift eliminator and drain back into the wet section of the tower.



AIR INLET LOUVERS

Cellular air Inlet louvers with advanced design improve air flow into the cooling tower, keep out debris, eliminate water splash-out, which otherwise can cause icing, near-site water damage, and unnecessary water loss. The design restricts the amount of sunlight into the cooling tower to impede algae growth, reduce noise from the tower, and improve the tower's appearance.

OPTIONAL CONFIGURATIONS



CONTROL PANEL

The control panel is optional for each cooling tower, or a group of towers can share a central control station. The enclosure can be made in powder coated carbon steel, or stainless steel on options, with or without weather proof arrangement.



PLC DIGITAL CONTROL

In cases digital or remote control function required, the PLC can be applied and programmed according to the project demands, with or without PC connection terminal, usually of brand Simens or AB.



AUTO MAKE UP UNIT

An optional part to make up the liquid automatically, to be working together with liquid level controller.



FREQUENCY CONTROL

An optional part to adjust the frequency of power supply.



PROTECTIVE GUARDS AND MAINTENANCE LADDER

For maintenance convenience and safety, made in HDG steel or stainless steel.



VIBRATION REDUCER

An optional part applied to reduce running vibration when necessary, of nature frequency 2.16Hz ~ 4.79Hz

Our key Clients

 مستشفى الرياض riyadh hospital	 برودان Brodan	 Medical Elements العناصر الطبية	 التقدم الطبي Advance Medical
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 PAKISTAN INTERNATIONAL SCHOOL RIYADH بدر زمني علميا 1963 DUTY DEVOTION	 مدارس رياض نجد Riyadh Najed Schools تعلم لتكون	 كياان الفنية Kayan Technical	 A D E A MAS-ADEA ARABIA CO. شركة ماس اديا العربية.
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